

WHAT IS CLAIMED IS:

1 1. A method of performing quality assurance on an interrupted treatment
2 of radiation therapy, the method comprising:

3 measuring a first delivered dose distribution during an uninterrupted
4 treatment;

5 measuring a second delivered dose distribution during an interrupted
6 treatment;

7 obtaining first and second images that represent the first and second delivered
8 dose distributions, respectively;

9 registering the first and second images so that they substantially map into the
10 same space; and

11 comparing the first and second images to determine any differences between
12 the first and second images.

1 2. The method of claim 1, further comprising displaying a quality
2 characteristic indicating the differences between the first and second images.

1 3. The method of claim 1, further comprising measuring the first and
2 second delivered dose distributions by exposing a detection medium to radiation from
3 an uninterrupted treatment and from an interrupted treatment, respectively.

1 4. The method of claim 3, further comprising measuring the first and
2 second delivered dose distributions by exposing the detection medium to a test
3 pattern.

1 5. The method of claim 3, further comprising measuring the first and
2 second delivered dose distributions by exposing the detection medium to a treatment
3 plan of a patient.

1 6. The method of claim 1, further comprising obtaining the first and
2 second images by digitizing the first and second delivered dose distributions,
3 respectively.

1 7. The method of claim 1, further comprising registering the first and
2 second images using an AFFINE transform.

1 8. The method of claim 1, further comprising comparing the first and
2 second images by subtracting the first image from the second image.

1 9. The method of claim 1, further comprising comparing the first and
2 second images by calculating dose area distributions from the first and second images.

1 10. The method of claim 9, further comprising subtracting the dose area
2 distribution of the first image from the dose area distribution of the second image.

1 11. The method of claim 1, further comprising comparing the first and
2 second images by calculating dose volume distributions from the first and second
3 images.

1 12. The method of claim 11, further comprising subtracting the dose
2 volume distribution of the first image from the dose volume distribution of the second
3 image.

1 13. The method of claim 1, further comprising comparing the first and
2 second images by calculating cumulative dose area distributions from the first and
3 second images.

1 14. The method of claim 13, further comprising subtracting the cumulative
2 dose area distribution of the first image from the cumulative dose area distribution of
3 the second image.

1 15. The method of claim 1, further comprising comparing the first and
2 second images by calculating cumulative dose volume distributions from the first and
3 second images.

1 16. The method of claim 15, further comprising subtracting the cumulative
2 dose volume distribution of the first image from the cumulative dose volume
3 distribution of the second image.

1 17. A device for performing quality assurance on an interrupted treatment
2 of radiation therapy, the device comprising a software routine tangibly embodied on a
3 computer-readable medium and configured to generate a quality characteristic
4 indicating differences between an uninterrupted treatment and an interrupted
5 treatment, the software routine generating the quality characteristic from first and
6 second images, the first and second images derived, respectively, from measurements
7 of a first delivered dose distribution obtained during an uninterrupted treatment and a
8 second delivered dose distribution obtained during an interrupted treatment.

1 18. A system for performing quality assurance on an interrupted treatment
2 of radiation therapy, the system comprising a computer having a graphical user
3 interface enabling a user to interact with a software routine running on the computer,
4 the software routine configured to generate a quality characteristic indicating
5 differences between an uninterrupted treatment and an interrupted treatment, the
6 software routine generating the quality characteristic from first and second images,
7 the first and second images derived, respectively, from measurements of a first
8 delivered dose distribution obtained during an uninterrupted treatment and a second
9 delivered dose distribution obtained during an interrupted treatment.